





(19) JAPANESE PATENT OFFICE

(11) Publication Number: JP 03245523 A

(43) Date of publication: 19911101

(51) int. Cl : H01L021-203  
(ICS) C23C014-32

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(21) Application Information:
19900222 JP 02-43090

MANUFACTURE OF QUANTUM WELL STRUCTURE

(57) Abstract:

PURPOSE: To minimize the dispersion in the quantum effect by a method wherein the orbit of ions is changed corresponding to the number of atoms having cluster ions by an orthogonal magnetic field while a base mounting a crystal substrate is arranged making an angle of a mounting surface with the orbit on the orbit of ions having specific atom numbers so as to make the ions adhere to the base.

CONSTITUTION: Multiple cluster ions are produced from a Ga cluster ion source 1 to ions 6-8 respectively having positive charges so as to be impressed with accelerating electric field 3 using an accelerating electric field generating grid 2 for sending the ions 6-8 in a specific direction. At this time, since the ions 8 in large mass advance straight ahead while the courses of the other ions 7, 6 in small mass are bent, the latter ions 7, 6 are sent to a GaAs substrate 4 retaining an AlGaAs layer 5 mounted on a substrate holder 12. In such a constitution, box type quantum well structures in even size are erected on the layer 5 since the layer 5 is irradiated with As cluster ions 10 from another As cluster ion source 9.

